

CLAIMS

We claim:

1. In a computerized network environment including a client system, a network provider, and one or more devices that can be accessed locally or over a network, a method for providing the client system access to one or more of the devices through the network provider, the method comprising the following:

an act of identifying one or more devices that can be accessed;

an act of generating a target that identifies at least one of the one or more devices, and that includes at least one corresponding device identifier;

an act of associating client authorization information identified by the network provider with the target that identifies the at least one device; and

an act of assigning the target to a port through a protocol-independent port driver at the network provider.

2. The method as recited in claim 1, wherein the at least one of the one or more devices can be accessed locally through a local access protocol.

3. The method as recited in claim 1, wherein the at least one of the one or more devices is a network device that can be accessed on a network through a network access protocol.

4. The method as recited in claim 1, wherein the act of identifying one or more devices further includes an act of creating one or more devices that can be accessed over the network.

5. The method as recited in claim 4, wherein the act of creating one or more devices includes an act of identifying a at least one of a partition and file, wherein the at least one of a partition and file represents at least a portion of one of the one or more devices, and wherein the at least one of a partition and file can be configured by the network provider to provide the client modifiable access to the portion of the one of the one or more devices.

6. The method as recited in claim 1, further comprising an act of providing client access to one or more of a port, a WWN, and a portal through the protocol-independent port driver, such that the protocol-independent port driver is accessed through one or more protocol-dependent mini-ports.

7. The method as recited in claim 6, wherein the protocol-independent port driver and one or more protocol-dependent mini-port drivers are managed by the centralized service, and wherein the one or more protocol-dependent miniport drivers plug-in to the protocol-independent port driver.

8. The method as recited in claim 7, wherein at least one of the one or more protocol-dependent miniport drivers communicates through one or more of an Ethernet, Token Ring, fiber channel, USB, or wireless protocol.

9. The method as recited in claim 1, wherein the at least one device is a virtual SCSI device that can be accessed through an iSCSI protocol.

10. The method as recited in claim 9, wherein the virtual SCSI device is a storage device, and the network comprises a storage area network.

11. The method as recited in claim 10, wherein the storage device is one or more of an internal or external magnetic storage medium, an optical storage medium, and a tape backup drive.

12. The method as recited in claim 1, wherein the network provider manages one or more targets, one or more drivers, and authentication information for one or more clients through a centralized directory service.

13. The method as recited in claim 12, wherein the network device identifier is identified by a target name and a LUN that has been assigned to the at least one device by the centralized directory service.

14. The method as recited in claim 13, wherein the logical unit number refers to one or more of a device, a plug-and-play identifier for a device, a global unique identifier for a device; a device driver that interfaces with a device; and at least one of a partition and file that represents a portion of a device.

15. In a computerized network environment including a client system, a network provider, and one or more devices that can be accessed locally or over a network, , a computer program product comprising computer-executable instructions for performing a method for providing the client system access to one or more of the devices over the through the network provider, the method comprising the following:

an act of identifying one or more devices that can be accessed;

an act of generating a target that identifies at least one of the one or more devices, and that includes at least one corresponding device identifier;

an act of associating client authorization information identified by the network provider with the target that identifies the at least one device; and

an act of assigning the target to a port through a protocol-independent port driver at the network provider.

16. The computer program product as recited in claim 15, wherein the at least one of the one or more devices can be accessed locally through a local access protocol.

17. The computer program product as recited in claim 15, wherein the at least one of the one or more devices is a network device that can be accessed on a network.

18. The computer program product as recited in claim 15, wherein the act of identifying one or more devices further includes an act of creating one or more devices that can be accessed over the network

19. The computer program product as recited in claim 18, wherein the act of creating one or more devices includes an act of identifying at least one of a partition and file, wherein the at least one of a partition and file represents at least a portion of one of the one or more devices, and wherein the at least one of a partition and file can be configured by the network provider to provide the client modifiable access to the portion of the one of the one or more devices.

20. The computer program product as recited in claim 15, further comprising an act of providing client access to one or more of a port, a WWN, and a portal through the protocol-independent port driver, such that the protocol-independent port driver is accessed through one or more protocol-dependent mini-ports.

21. The computer program product as recited in claim 20, wherein the protocol-independent port driver and one or more protocol-dependent mini-port drivers are managed by the centralized service, and wherein the one or more protocol-dependent miniport drivers plug-in to the protocol-independent port driver.

22. The computer program product as recited in claim 21, wherein at least one of the one or more miniport drivers communicates through one or more of an Ethernet, Token Ring, fiber channel, USB, or wireless protocol.

23. The computer program product as recited in claim 15, wherein the at least one device is a virtual SCSI device that can be accessed through an iSCSI protocol.

24. The computer program product as recited in claim 23, wherein the virtual SCSI device is a storage device, and the network comprises a storage area network.

25. The computer program product as recited in claim 24, wherein the storage device is one or more of an internal or external magnetic storage medium, an optical storage medium, and a tape backup drive.

26. The computer program product as recited in claim 15, wherein the network provider manages one or more targets, one or more drivers, and authentication information for one or more clients through a centralized directory service.

27. The computer program product as recited in claim 26, wherein the device identifier is identified by a target name and a LUN that has been assigned to the at least one device by the centralized directory service.

28. The computer program product as recited in claim 27, wherein the LUN is assigned to one or more of a device identifier, a plug-and-play identifier for a device, a global unique identifier for a device; a device driver that interfaces with a device; and at least one of a partition and file that represents a portion of a device.

29. In a computerized network environment including a client system, a network provider, and one or more devices that can be accessed locally or over a network, a method for providing the client system access to one or more of the devices over the through the network provider, the method comprising the following:

- an act of identifying one or more devices that can be accessed;
- an act of generating a target that identifies at least one of the one or more devices, and that includes at least one corresponding device identifier;
- an act of associating client authorization information identified by the network provider with the target that identifies the at least one device; and
- a step for exposing the at least one device to the client through a specific one of a network port, a WWN, and a portal, such that the client can access the at least one device identified by the target when the client has access to the specific one of a network port, a WWN, and portal,, and when the client presents the associated client authorization to the network provider.

30. The method as recited in claim 29, wherein the step for exposing the at least one device to the client through a specific one of a network port, a WWN, and a portal:

- an act of assigning the target to a port through a protocol-independent port driver at the network provider; and
- an act of providing client access to the specific one of a port, a WWN, and a portal through the protocol-independent port driver, such that the protocol-independent port driver is accessed through one or more protocol-dependent mini-ports.

31. The method as recited in claim 30, wherein the client is provided access to the specific one of a port, a WWN, and a portal by virtue of being authenticated at one or more of a local centralized service provider, and a remote authentication database.

32. In a computerized environment including a client computer and a storage service provider on a storage area network, the storage service provider comprising one or more storage devices, a method of providing the client computer with access to one or more of the storage devices on the storage service provider through an iSCSI protocol, the method comprising the following:

an act of identifying one or more device identifiers corresponding to one or more storage devices on a storage service provider, wherein the one or more storage devices can each be represented by at least one of a physical device, a virtual device, a partition and a file;

an act of receiving from a centralized directory service a modifiable client resource that identifies client authorization to access the storage device, and a portion of the storage device that the client can access;

an act of creating a target containing one or more logical unit numbers that have been assigned to the identified device identifiers, wherein access to the target is provided according to the modifiable client resource; and

an act of providing the client computer access to the storage device through a client-restricted port on the storage service provider, such that if the client has access to the client-restricted port, the client can access the storage device by providing the storage service provider with client authorization.

33. The method as recited in claim 32, wherein centralized directory service receives client access information from at least one of a local and remote database.

34. The method as recited in claim 32, further comprising:

receiving at the storage service provider a client computer request to access at least one of the one or more storage devices, wherein the client computer request is received through a protocol dependent mini-port;

receiving client authorization; and

upon recognizing that the client authorization corresponds with the requested at least one of the one or more storage devices, and that the client is authorized to access the target;

providing the client computer with access to the at least one of the one or more storage devices in the target.

35. The method as recited in claim 32, wherein the client-restricted port is managed by the centralized service and a protocol-independent port driver that receives network traffic through one or more protocol-dependent mini-port drivers.

36. The method as recited in claim 35, wherein the one or more protocol-dependent mini-port drivers are plug-ins to the protocol-independent port driver.

37. The method as recited in claim 36, wherein at least one of the one or more mini-port drivers communicates through one or more of an Ethernet, Token Ring, USB, fiber channel, or wireless connection protocol.

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